

CLAIMS

What is claimed is:

1. An apparatus for forming a nano grating device, comprising:
 - a light source, used to emit a first beam;
 - 5 a beam splitter, mounted on one side of the light source to split the first beam emitted from the light source into two second beams;
 - two reflectors, mounted on the other side of the splitter opposite to the light source to respectively receive the second beams generated by the light splitter and then reflect a third beam;
 - 10 two light emitting modules, mounted on the other side of the reflectors opposite to the light splitter to respectively receive the third beams from the reflectors and generate a fourth beam; and
 - a hemi-sphere lens, having a flat surface and being mounted on the other side of the light emitting modules opposite to the reflectors, a photosensitive substrate is attached onto the flat
 - 15 surface, and each of the fourth beam travels along the same optical paths to reach the photosensitive substrate that is later exposed to form a grating structure.
2. The apparatus of claim 1, wherein the light source is a laser.
- 20 3. The apparatus of claim 1, wherein the beam splitter is an optical fiber for splitting the first beam into two beams.
4. The apparatus of claim 1, wherein the light emitting modules respectively include an amplifying object lens, a filtering pinhole and a lens, the third beams pass subsequently
- 25 through the amplifying object lens, a filter pinhole and the lens to respectively form a fourth beam.

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5. The apparatus of claim 1, wherein the two light emitting modules are symmetrically mounted at either sides of the hemi-sphere lens to allow the fourth beams to travel the same optical paths and then project on the photosensitive substrate.

5 6. The apparatus of claim 1, wherein after the grating structure is formed on the photosensitive substrate, rotating and exposing the photosensitive substrate to form another grating structure crossing the grating structure that constructs a filter.

7. The apparatus of claim 1, further comprising a movable platform to move the photosensitive substrate.